Space Weather Forecast

Issued on Sunday, 01 May 2022 at 13:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: X-flare from AR2992 on 30th from behind limb. Activity reducing, with decreasing chance of Moderate flares 1st May. Slight chance G1 Minor Geomagnetic storms on 1st May.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been High, with one Strong-class and one Moderate-class flare observed. Both of these flares were from a region which is beyond the northwestern limb, but with the magnetic loops protruding above the horizon. There are four regions on the visible disc, all of these benign and stable. No Earth-directed CMEs (coronal mass ejections) have been observed on available imagery.

Solar Wind / Geomagnetic Activity: The solar wind started elevated due to the joint influences of a fast solar wind and a passing CME, but has declined to slightly elevated levels as a solar fast wind declines. The strength of the interplanetary magnetic field was weak throughout, with the important north-south component, also varying weakly. Geomagnetic activity has been Quiet to Unsettled throughout the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at very near background levels. No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Activity may reach Moderate levels on 1st May, but should soon decline to mainly Low or Very Low as the responsible region rotates further onto the far side of the Sun. There is a very slight chance of further Moderate-class flares from the remaining regions on the visible disc.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 29th April may glance the Earth on 1st May, but this is considered a low probability event. The high speed stream is expected to ease by the end of 2nd May, giving way to ambient conditions for the remainder of the period. Quiet to Unsettled geomagnetic activity is forecast through the next four days, but with a risk of Active or G1/Minor Storms on 1st May should the forecast CME affect the Earth.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background levels with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	5	1	1
Strong	G3	No	2	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	30	5	10	10
Very Active	R3 to R5 X	Yes	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	1	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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